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ABSTRACT

Factor analysis of the Bem Sex Role Inventory (BSRI) and the Personality Attributes Questionnaire (PAQ) was undertaken to study the independence of the masculine and feminine scales within each instrument. Both instruments were administered to undergraduate education majors. Analysis of primary first and second order factors of the BSRI indicated that no masculine or feminine factor existed for the instrument as a whole, although several factors appeared to be sex-typed. First order factors were empathy, leadership, trustworthiness, independence, assertiveness, and unpredictable self-centeredness. The BSRI also contained items reflecting social desirability. Factor analysis of the PAQ did not show separate and independent masculine and feminine scales, and only the empathy factor appeared to be sex-typed. Other first order factors were emotion, aggressiveness, and self confidence. Although both questionnaires were based on the assumption of independent male and female scales for conceptual and psychometric purposes, these independent factors were not identified in this study. (MH)

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A Factor Analysis of the BSRI and the PAQ

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A Factor Analysis of the BSRI and PAQ

Within the past several years, the construct of sex role identification has assumed increasing importance as an area of research in psychology. Specifically, the concept of androgyny has been the focus of this renewed interest. Because androgyny has been conceptualized as representing an integration of masculine and feminine roles, the development of appropriate instrumentation is a vital step in the investigation of the construct

Perhaps the two primary measures currently available are the Bem Sex Role Inventory (BSRI) (Bem, 1974, 1977) and the Personality Attributes Questionnaire (PAQ) (Spence, 1974). Both measures are similar in that masculine (M) and feminine (F) scales are employed to determine sex role identity. An individual is categorized as androgynous if scores on both the M and F scales are above the median, as masculine if the M score is above the median and the F score is below the median, as feminine if the F score is above the median and the M score is below the median, and as undifferentiated if both the M and F scores fall below the median.

Both Bem and Spence have conceptualized masculine and feminine roles as being independent, rather than as representing bipolar extremes of a sex role continuum. This conceptualization, taken together with the sex-role categorization format of both instruments, makes it imperative that the masculine and feminine scales on the BSRI and the PAQ be truely independent. Although both authors have reported data (Bem, 1974, Spence, 1974) concerning the development of their instrument, neither has reported any factor analytic support for the independence of the Masculine and

Feminine scales.

A review of current literature indicates only a few factor analytic studies have examined the BSRI and that the assumption of the independence of scales in the PAQ has not been examined. Gaudreau (1977) examined the BSRI using a sample of industrial workers, police officers and housewives. Her analysis identified four factors: masculine, feminine, sex of subject, and "mature" neutral. Because some of the masculine and feminine items didn't significantly contribute to any of these factors, Gaudreau recommended their exclusion from the instrument. However, the findings as a whole supported the conceptualization of masculinity and femininity as independent traits and indicated that the masculine and feminine scales of the BSRI are independent.

Moreland, Gulanick, Montague, and Harren (1978) also factor analyzed the BSRI with results which were similar to those reported by Gaudreau (1977). Additionally, Whetton and Swindells (1977) employed factor analysis to examine the assumption of independence of scales on the BSRI. Although their findings provide some support for the independence of the scales, major concerns are raised. In all, seventeen factors were identified (accounting for just over 50% of the variance), of which five were considered primary factors. Of the primary factors (empathy, power, honesty, autonomy, and neuroticism), empathy was identified as feminine and power as masculine. Unfortunately, these two factors accounted for only about 18% of the variance between them, with 7 feminine and 8 masculine items included. The results indicated that there are more than two dimensions of masculinity-femininity and that the BSRI consists of

more than 2 factors. Additionally, Whetton and Swindells felt that an androgyny category based on the masculine and feminine scales is of doubtful validity because of the lack of demonstrated independence.

Because of the wide discrepancy in the findings reported by Gaudreau (1977) Moreland, Gulanick, Montague, and Harren (1978) and Whetton and Swindells (1977), the assumption of independence of scales of the BSRI is very much open to question. The present study was designed to examine both the BSRI and the PAQ with respect to the independence of the masculine and feminine scales within each instrument. It was felt that demonstration of independence is of paramount importance in the establishment of these instruments as valid measures of independent sex roles.

As Whetton and Swindells (1977) point out there are three possible outcomes of a factor analysis of instruments which propose conceptually seperate male and female dimensions: (1) a single bipolar factor, (2) a single masculine and a single feminine factor, as would be consistent with the conceptualization of the BSRI and the PAQ, and (3) a larger number of factors reflecting a variety of traits.

Methodology

Subjects

The BSRI was completed by 161 undergraduate student volunteers and the PAQ by 177 undergraduate student volunteers. All Ss were juniors or seniors in teacher education programs at the University of Houston.

Instruments

The BSRI consists of 60 items, 20 from each of three scales:

Masculinity (M), Femininity (F), and Social Desirability (SD). The instructions direct Ss to indicate on a 7 point scale the extent to which each item is descriptive of them. Each of the 7 points on the scale is labeled with the scale extending from 1 (never or almost never true) to 7 (always or almost always true).

The PAQ consists of 24 items which include 8 items from each of three scales: Masculinity (M), Femininity (F), and Masculinity-Femininity (M-F). The instructions direct Ss to indicate on a 5 point scale the point on the scale which best describes them on each descriptive continuum. Unlike the BSRI, only the end points of each scale are labeled on the PAQ and represent a bipolar continuum. Both instruments are scored in the same manner and establish individual sex role identity categories using identical procedures.

Analysis

Initial factor analyses for both the BSRI and the PAQ employed principal component extraction, rotated to varimax criteria. Additionally, for the BSRI, second order factors were examined. The orthogonality of the first order factors was relaxed to an oblique position through the use of the Harris-Kaiser Type II method, followed by a principal components extraction from the matrix of intercorrelations of the oblique factors, then rotated to varimax criteria. For the second order analysis, all possible factors (16) were extracted.

Results

The first order factor analyses of the BSRI produced sixteen factors which accounted for a total of 69.1% of the variance. Of

the 16 factors identified, six factors each accounted for 4.3% or more of the variance, with the remaining 10 factors each accounting for 2.5% to 3.9% of the variance. The six factors which were designated as primary factors accounted for 38.8% of the variance between them and are presented in Table 1. These factors were labeled Empathy, Leadership, Trustworthiness, Independence, Assertiveness, and Unpredictable-Self Centered.

The second order factor analysis of the BSRI identified 16 factors also accounting for 69.1 % of the variance (i.e., 100% of the first order variance available). Nine of the sixteen factors each accounted for 4.0% or more of the variance, with the remaining seven factors each accounting for less than 4.0% of the variance. The nine primary factors accounted for 45.8% of the variance between them and are presented in Table 2. These factors were labeled: Leadership; "Girl Scout - Boy Scout", Aggressive - Forceful, Empathy, Masculine - Athletic, Openness, Passive - Emotional, Self-Sufficient, and Discrete Conformity.

The first order factor analysis of the PAQ identified six factors which accounted for 45.8% of the variance. Of the six factors, four were considered to be primary factors accounting for 40.0 % of the variance between them. These factors are presented in Table 3 and were labeled: Empathy, Emotional, Aggressive, and Self Confident. Because of the small number of factors identified, it was inappropriate to attempt to identify second order oblique factors for the PAQ.

Discussion

An examination of the primary first and second order factors of the BSRI (Tables 1 and 2) clearly indicates that no single

masculine or feminine factor exists for the instrument as a whole. However, several factors do seem to be sex-typed in that they are composed of items from a single scale with patterns coefficients in the appropriate direction. The first order factors identified as Independent and Assertive are both masculine factors with the Leadership factor containing 5 M items and 1 Social Desirability (SD) item. No primary first order factors are exclusively feminine, although the empathy factor includes 11 of the 20 items from the F scale. The second order factors labeled Leadership and Aggressive-Forceful are masculine factors with the exception of 1 item in each factor, while the empathy factor is the closest approximation of a pure feminine factor.

The amount of variance accounted for by the factors identified above as masculine or feminine and approximating masculine or feminine (29.1% for first order factors, 16.9% for second order factors) does not seem adequate to support the assumption of two independent scales.

The factor analysis of the PAQ also did not indicate the presence of seperate and independent masculine and feminine scales. Of the four primary factors identified, only the empathy factor seems to represent a sex-typed scale. As with the BSRI, the percent of variance accounted for by this factor (13.7%) also does not support the assumption of independent scales.

The results of the factor analysis of the BSRI and the PAQ bring into question the assumptions underlying these instruments. Because both instruments assumme the existence of independent masculine and feminine scales for conceptual and psychometric

reasons, the failure to identify these independent factors in either scale is of primary importance. The results suggest that more than two dimensions of masculinity and femininity are being measured as well as other personality variables.

Based on this study, it is not possible to determine whether the lack of single masculine and feminine factors can be attributed to the instrument per se, the underlying conceptualization of androgyny, or a combination of factors. In any case, a re-examination of the construct as it is measured by these instruments certainly seems warranted.

References

Bem, S. L. On the utility of alternative procedures for assessing psychological androgyny, Journal of Consulting and Clinical Psychology, 1977, 45, No. 2, 196-205.

Bem, S. L. The measurement of psychology androgyny, Journal of Consulting and Clinical Psychology, 1974, 42, No. 2, 155-162.

Gaudreau, P. Factor analysis of the Bem Sex-Role Inventory, Journal of Consulting and Clinical Psychology, 45, No. 2, 299-302.

Moreland, J. R., Gulanick, N., Montague, E. K. and Harren, V. A. Some psychometric properties of the Bem Sex-Role Inventory, Applied Psychological Measurement, Vol. 2, No. 2, 1978, 249-256.

Spence, J., Helmreich, R., and Stapp, J. The Personal Attributes Questionnaire: A measure of sex role stereotypes and masculinity-femininity, JSAS Catalog of Selected Documents in Psychology, 1974, 4, 43.

Whetton, C. and Swindells, T. A factor analysis of the Bem Sex-Role Inventory, Journal of Clinical Psychology, 1977, 33, No. 1, 150-153.

Table 1

Primary First Order Factors

of the BSRI

Scale		Item	Pattern Coefficient
Factor	I:	Empathy (13.9% of the variance)	
	F	Compassionate	.815
	F	Sensitive to needs of others	.813
	F	Sympathetic	.788
	F	Understanding	.764
	F	Affectionate	.751
	F	Tender	.724
	F	Warm	.684
	SD	Helpful	.669
	F	Gentle	.653
	F	Eager to soothe hurt feelings	.644
	SD	Friendly	.622
	F	Cheerful	.570
	SD	Tactful	.562
	SD	Happy	.470
	F	Loyal	.465
	SD	Sincere	.458
	SD	Likable	.451
Factor	II:	Leadership (6.1% of the variance)	
	M	Acts as leader	.814
	M	Has leadership abilities	.786
	M	Strong personality	.672
	M	Dominant	.580

	SD	Theatrical	.487
	M	Assertive	.484
Factor III:		Trustworthy (5.4% of the variance)	
	SD	Reliable	.704
	SD	Truthful	.698
	SD	Sincere	.661
	SD	Loyal	.556
	SD	Likable	.396
Factor IV:		Independence (4.7% of the variance)	
	M	Independent	.798
	M	Individualistic	.673
	M	Self-sufficient	.657
	M	Self-reliant	.458
Factor V:		Assertiveness (4.4% of the variance)	
	M	Willing to take risks	.680
	M	Forceful	.644
	M	Makes decisions easily	.468
	M	Dominant	.415
Factor VI:		Unpredictable-Self centered (4.3% of the variance)	
	SD	Unpredictable	.678
	SD	Conceited	.547
	SD	Inefficient	.515
	F	Loves children	-.484

Table 2

Primary Second Order Factors

of the BSRI

Scale		Item	Pattern Coefficient
Factor	I:	Leadership (6.1% of the variance)	
	M	Acts as leader	.801
	M	Has leadership ability	.782
	M	Strong personality	.590
	M	Dominant	.475
	M	Assertive	.423
	SD	Theatrical	.381
	M	Athletic	.300
Factor	II:	Girl Scout-Boy Scout (6.1% of the variance)	
	SD	Reliable	.710
	SD	Sincere	.629
	SD	Truthful	.625
	F	Loyal	.569
	SD	Inefficient	-.491
	SD	Likable	.329
	SD	Helpful	.328
	SD	Conscientious	.309
Factor	III:	Aggressive-Forceful (5.4% of the variance)	
	M	Aggressive	.573
	M	Defends own beliefs	.572
	M	Forceful	.558

	M	Willing to take a stand	.532
	M	Competitive	.506
	M	Willing to take a risk	.467
	M	Dominant	.408
	M	Ambitious	.381
	F	Yielding	-.304
Factor IV:		Empathy (5.4% of the variance)	
	F	Compassionate	.568
	F	Sensitive to feelings of others	.564
	F	Sympathetic	.518
	F	Understanding	.489
	SD	Helpful	.382
	SD	Tactful	.351
	F	Warm	.304
Factor V:		Masculine-Athletic (5.3% of the variance)	
	M	Masculine	.905
	F	Feminine	-.819
	M	Athletic	.442
	M	Ambitious	-.366
	F	Shy	.307
Factor VI:		Openness (4.6% of the variance)	
	SD	Happy	.669
	F	Cheerful	.618
	F	Gullible	.319
	SD	Conscientious	-.317
	F	Loyal	.316

SD	Secretive	-.309
Factor VII:	Passive-Emotional (4.5% of the variance)	
SD	Jealous	.517
F	Affectionate	.502
F	Tender	.456
F	Eager to soothe hurt feelings	.386
M	Willing to take risks	-.378
M	Self-reliant	-.345
M	Makes decisions easily	-.344
Factor VIII:	Self-sufficient (4.4% of the variance)	
M	Self-sufficient	.758
M	Self-reliant	.485
M	Independent	.448
M	Individualistic	.410
M	Athletic	.334
SD	Conscientious	.330
M	Analytical	.315
F	Yielding	.312
Factor IX:	Discreet-Conformity (4.0% of the variance)	
F	Does not use harsh language	.582
SD	Conventional	.457
SD	Tactful	.445
F	Gentle	.378
F	Flatterable	.376
M	Individualistic	.334

Table 3

Primary First Order Factors

of the PAQ

Scale		Item	Pattern Coefficient
Factor	I:	Empathy (13.7% of the variance)	
	F	Aware of feelings of others	.770
	F	Kind	.741
	F	Understanding of others	.735
	F	Warm in relations to others	.655
	F	Helpful to others	.617
	F	Able to devote self to others	.459
	M-F*	Need for security	.367
Factor	II:	Emotional (12.1% of the variance)	
	M-F*	Feelings easily hurt	.647
	M-F*	Cries	.607
	M-F*	Not excitable in crisis	.605
	F	Emotional	.551
	M-F*	Needs security	.489
	M	Stands up well under pressure	-.473
	M*	Doesn't make decisions easily	.462
	M	Independent	-.453
	M-F*	Attends to approval of others	.424
	M	Self confident	-.359
Factor	III:	Aggressive (9.3% of the variance)	
	M-F	Dominant	.636

M	Active	.584
M-F	Aggressive	.550
F	Gentle	-.468
M	Competitive	.425
M*	Makes decisions easily	.390
M-F*	Indifferent to feelings of others	.360
M-F*	Little need for security	.314
M-F	Worldly	.304

Factor IV: Self confident (4.9% of the variance)

M	Feels superior	.718
M	Self-confident	.539
M-F*	Indifferent to other approval	.363

*These item descriptions have been reflected in the analysis for clarity of presentation of the factor.